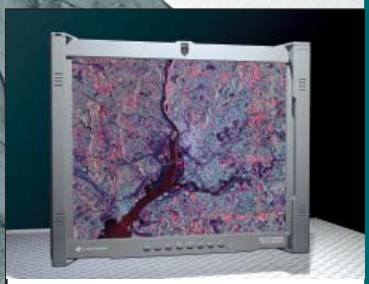
FIELD-READY



StarGate 20

User Manual

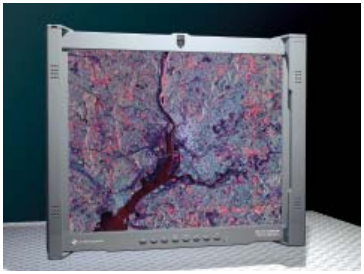
Z Microsystems

FCC INFORMATION

WARNING

TO PREVENT FIRE OR SHOCK HAZARDS, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE. ALSO, DO NOT USE THIS UNIT'S POLARIZED AS PLUG WITH AN EXTENSION CORD RECEPTACLE OR OTHER OUTLETS UNLESS ALL THREE PRONGS CAN BE FULLY INSERTED

1. Use the power and video cables supplied with the product to help prevent interference with radio and television reception. The use of cables and adapters may cause interference with electronic equipment in the vicinity of this unit.



StarGate 20

2. Changes or modifications not expressly approved by Z Microsystems could void user's warranty.

CAUTION

RISK OF ELECTRIC SHOCK - DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT REMOVE COVER (OR BACK OF UNIT). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.

This symbol warns the user that insulated voltage within the unit may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any part inside this unit.

This symbol alerts the user that important literature concerning the operation and maintenance of this unit has been included. Therefore it should be read carefully in order to avoid any problems.

Doc# 27-0027UM Rev 1.0 Issued 10/04

TABLE OF CONTENTS

SECTION **PAGE**

Introduction 4
- About This Manual 4
- Safety Precautions 4
- Product Description 5

Installation Instructions 6
- Shipment Contents 6
- Required Tool 6
- Preparations 6
- Hardware Installation 7
- Cable Connections 10

Operations 11
- Power Up 11
- Display Panel Controls 12
- Display Panel Setup 13
- Onscreen Menus 14
- SoftMenus 22

Maintenance 32

Troubleshooting 33
- No Main Display Image 33
- No Picture-in-Picture Option Appears on Main Menu 34
- No Picture-in-Picture Display Image 34
- Display Image Has Vertical Bars 35
- Display Image Appears Fuzzy 35
- Power Light Does Not Illuminate 35

Schematics 36
- Mechanical Outline for StarGate 36
- Mechanical Outline for StarGate 37

Replacements 38

Appendix 39
- Specifications for StarGate 39
- Warranties 41
- Customer Support 47
- Customer Feedback 48
- StarGate Serial Control ICD 49

ABOUT MANUAL

This Manual is also available on the Z Microsystems website (www.zmicro.com). We recommend you read this manual carefully and follow the instructions in the Installation chapter for verification of system functions and control settings.

The StarGate has an optional Touch Screen operation. Refer to the ELO touch screen CD (user manual on the CD) when installing the StarGate.

Safety Precautions

DANGER:

To avoid shock hazard:

- *Do not remove the covers around the StarGate*
- *Do not connect or disconnect the StarGate during an electrical storm.*
- *The power cord plug must be connected to a properly wired and grounded power outlet.*
- *Any equipment to which the StarGate will be attached must also be connected to properly wired and grounded power outlets.*

PRODUCT DESCRIPTION

The rugged light-weight StarGate offers MIL-tailored high-end liquid crystal displays (LCD's) that can adapt to specific needs.

Dual locks hold the StarGate firmly in the viewing position.

Quick release levers allow it to swing open.

The StarGate can be opened all the way for access to storage items and other sensitive equipment.

A StarGate is built to easily withstand harsh environmental conditions. Automatic Phase Adjust functions lock to drifting graphic generator clocks and the Triple Frame Buffer allows a wide range of input signal refresh rates.

The StarGate is only 5.5" deep and 15.75" (9U) in height. It attaches to the front of RETMA rails in standard 19" racks and transit cases and requires no space inside the rack. Dual locks hold the StarGate firmly in the viewing position. Quick release levers allow it to swing open for access to storage items and other sensitive equipment behind.

The rugged, light weight design of the StarGate will stand up to the most extreme environmental conditions.

Available in 20" active display areas, featuring up to 1600 x 1200 pixel resolution, the StarGate offers an additional PIP option to help with equipment reduction in workspaces. StarGate displays plug-and-play with any workstation, PC or X-Terminal and with active-matrix LCD technology it provides astounding color and clarity.

Packaged in a lightweight aluminum enclosure, the StarGate target application platforms include airplanes, helicopters, surface ships, submarines, vehicles and mobile shelters.

The StarGate features front control panel, an optional user replaceable safety glass protective lens, and low power usage extends the life of the display.

The packaging and design of the electronics minimizes its susceptibility and emmissions of electromagnetic interference.

SHIPMENT CONTENTS

Ensure all of the following parts are included in the package received from Z Microsystems. Verify all parts have not been damaged during shipment. If any of the parts are missing or damaged, immediately contact Z Microsystems Customer Service at 858-657-1000.

- StarGate unit attached to the mounting plate
- Power Cable
- User Manual
- Video Cable
- Serial Cable
- Rack-mounting hardware
- ELO Software CD for optional Touch Screen (user manual on CD)

Remember to save the unit's original shipping materials. It may be necessary to move the unit at a later date.

Required Tools

- Phillips screwdriver

Preparations

In preparation to install the StarGate, take the following precautionary steps:

Verify the StarGate power switch is OFF.

Do not connect or disconnect the unit during an electrical storm.

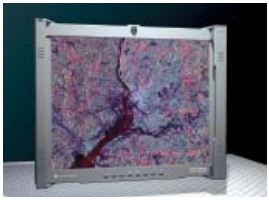
The power cord plug must be connected to a properly grounded power outlet.

Any equipment to which the unit will be attached must also be connected to properly wired and grounded power outlets.

NOTE: For the fastest and easiest installation of the StarGate, follow these steps in the sequence they are presented.

Doc# 27-0027UM Rev 1.0 Issued 10/04

HARDWARE INSTALLATION



The StarGate is a flat LCD that mounts on the front of the RETMA rails of a standard 19” rack.

The dual locks can be seen on the vertical handle to the left. The display controls are located on the bottom below the display.

On the center left side of the back is the receptacle for the power plug for the cord that leads from the power supply to the display, as well as the video connector and host serial connector.

Using both hands, press and slide the lock releases inside the handle on the left side of the display towards each other to release the locks and allow you to swing open the StarGate.

The StarGate display swings out to the right. The bracket that mounts to the front of the RETMA rails is on the left.

On the top and bottom of the mounting bracket is the receptacle for securing the display flat against the rack.

It is important to use the proper screws.

To secure the StarGate to the frame, use four Pan-head Phillips screws and washers on each side, for a total of eight.

NOTE: All four screw holes in the RETMA rail must be visible through the four screw holes on both sides of the StarGate. If not, move the StarGate up or down until all four holes are visible.

NOTE: Installing the StarGate requires two people, one to hold the unit, while the other secures the unit with screws.

One person hold the right side of the StarGate, while the other person secures the first screw in the upper left corner of the unit.

Before inserting any additional screws, check to see that all the remaining seven holes in the StarGate line up with the screw holes in the RETMA rails.

Then secure the remaining seven screws. Do NOT tighten the screws.

Test the fit by opening and closing the StarGate several times.

For a final adjustment, make sure that the back plate is flush against the RETMA rail and the back plate is square to the RETMA rails.

Once positioned, tighten down the screws.

Test the adjustment by opening and closing the StarGate display several times.

If there is any binding, check for alignment and repeat the previous step.

Doc# 27-0027UM Rev 1.0 Issued 10/04

The display protective lens is intended to protect the surface of the screen from damage while in transit or during storage. The protective lens is not intended to be used while the StarGate is in operation, but can be used to protect the display if desired.

Make sure the StarGate is in the closed position.

Move the protective lens release catch (located above the display) up.

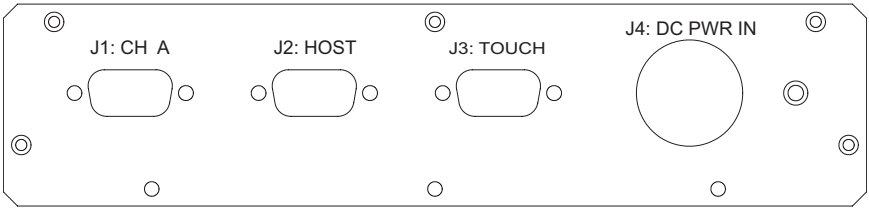
While holding up the release catch, slide the protective lens to the left or right.

Slide the protective lens off the edge of the display.

To reinstall the display protector during long storage or shipping, just reverse this process.

CABLE CONNECTIONS

The connections panel may vary due to non-standard configurations.



J1= Channel A (primary video feed)

J2= Host (Serial RS232 Connector to Main Controller)

J3= Optional Touch Screen Feature

J4= DC Power In

J5 (not shown)= Optional PIP Card

Panel Options

Either a RGB or NTSC PIP card can be installed in the option panel locations. All cabling configurations are specific to the chosen panel option.

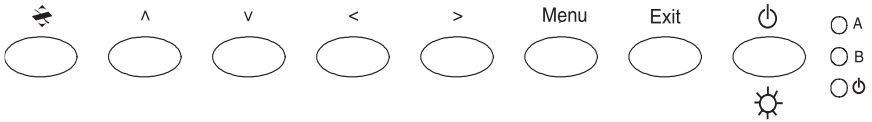
POWER UP

When the StarGate is connected, apply power and ensure the main screen appears. If the display does not turn on within ten seconds, press the Standby button on the display panel upon completion of cabling. If the main screen does not appear after hardware and cabling installations are complete, consult the Troubleshooting section of this manual.

DISPLAY PANEL CONTROLS

The StarGate features push-button controls on the lower front of the front bezel. To setup the display, use the following controls to fine tune the image on the screen:

NOTE: The following procedures are written for setup using the buttons on the display panel. See the "SoftMenus" section of this manual for remote setup.



Button functionality description table:

Main Display	Auto Adjust "Z"	^	v	<	>	Menu	Exit	⏻
Key Functions	Auto Position	Move up through menu functions	Move down through menu functions	Move left to adjust value of function	Move right to adjust value of function	Activates menu and menu functions	Exit from main menu or return from sub-menu to main menu	Hold down to turn backlight on and off; press briefly and repeatedly to increase or decrease backlight brightness

Channels

A — Green — VIDEO A is selected

B — Green — VIDEO B is selected

If A & B are both green, it indicates the Channel Auto Switching function is selected.

⏻ — green — power and signal

orange — power and no signal

off — Standby mode

Doc# 27-0027UM Rev 1.0 Issued 10/04

DISPLAY PANEL SETUP

NOTE: If the touch screen option has been purchased for the StarGate, the touch screen manufacturer's software must first be installed on the computer being used with the StarGate. Follow manufacturer's instructions and user manual for software installation and use.

This following section explains how to use the control buttons to adjust, image clarity and image position on the screen. In particular it discusses:

- The function of each of the push-button controls
- How to reset previously saved settings or return to factory settings
- Tips and techniques

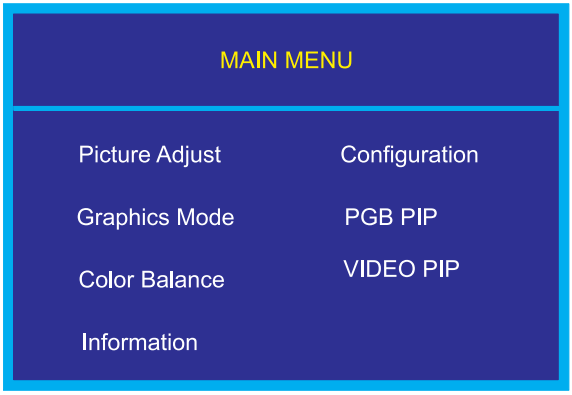
NOTE: The control buttons allow the user to control backlight operations; to store settings, and to revert to factory-saved settings.

Doc# 27-0027UM Rev 1.0 Issued 10/04

ONSCREEN MENUS

NOTE: When the unit is initially connected, no PIP screens are enabled, and therefore can not appear. See section titled "PIP configuration" for how to enable PIP screens.

To access the onscreen display main menu, press the menu button on the front of the panel. The StarGate's functions are controlled using the Main Menu's subtopics.



These submenus can be accessed using the Up and Down buttons on the display panel. See sections below for specifics regarding the submenus.

Main Screen Picture Adjust

Use the Up and Down buttons to highlight the "Picture Adjust" option. Press the "Menu" button to access the submenu.

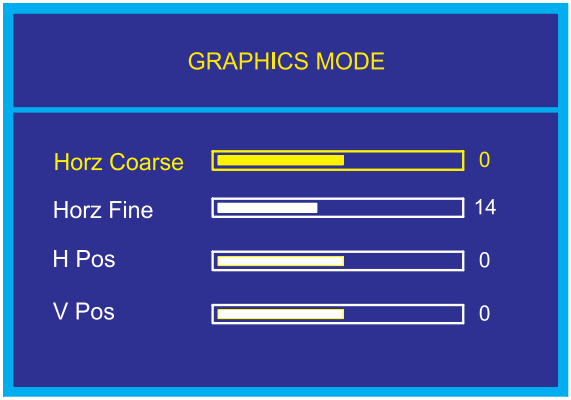
Use the Up and Down Keys to highlight the desired option. Use the Left and Right buttons to increase and decrease the Brightness and Contrast characteristics of the screen. Press "Exit" to return to the Main Menu. The new adjustments will be applied automatically.

NOTE: Brightness of the main screen can also be adjusted without entering the Main Menu using the up and down display buttons.

Doc# 27-0027UM Rev 1.0 Issued 10/04

Main Screen Graphics Mode

Use the Up and Down buttons to highlight the “Graphics Mode” option. Press the “Menu” button to access the “Graphics Mode” submenu.



“Graphics Mode” is used to adjust the positioning of the image. Use the Up and Down Keys to highlight the desired option. Use the Left and Right buttons to adjust the following modes: Horz Coarse, Horz Fine, H Pos, and V Pos.

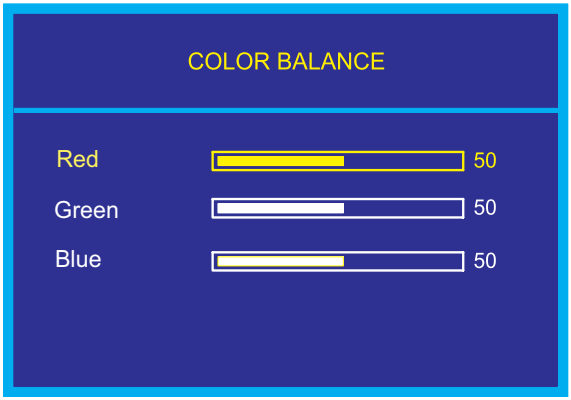
The “Horz Coarse” option adjusts the horizontal width of the image.

The “Horz Fine” option adjusts the phase of the video sampling clock.

Press “Exit” to return to the Main Menu. The new adjustments will be applied automatically.

Main Screen Color Balance

Use the Up and Down buttons to highlight the “Color Balance” option. Press the “Menu” button to access the “Color Balance” submenu.



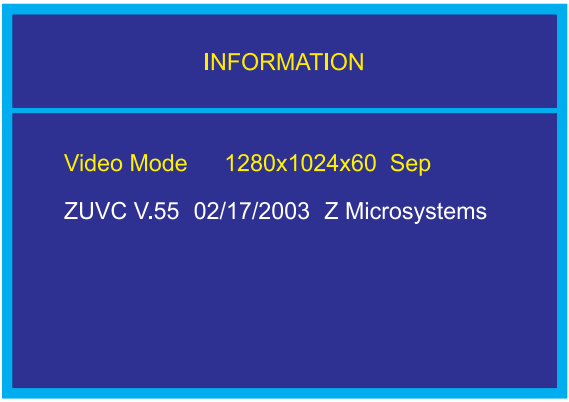
Use the Up and Down Keys to highlight the desired option. Use the Left and Right buttons to adjust the colors of the screen image.

Press “Exit” to return to the Main Menu. The new adjustments will be applied automatically.

Doc# 27-0027UM Rev 1.0 Issued 10/04

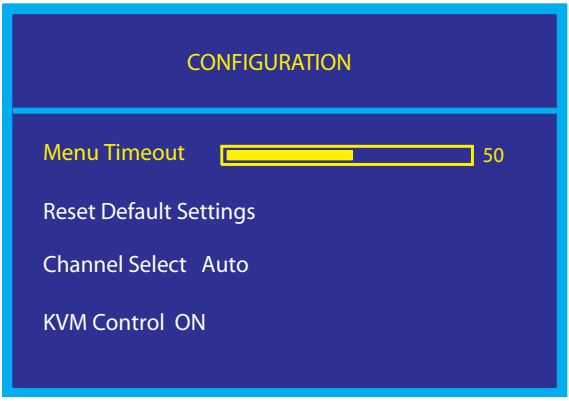
Main Screen Information

Use the Up and Down buttons to highlight the “Information” option. Press the “Menu” button to access the “Information” submenu.



Within this submenu, view the video mode resolution, the refresh rate, and the sync mode. Press “Exit” to return to the Main Menu. The Firmware Version and Build Date are also available on this screen.

Main Screen Configuration



Menu Timeout:

The menu timeout is the amount of time the menu will appear while not in use before it times out. When the menu times out, it disappears from the main screen. Select with Up and Down keys and adjust with the Left and Right keys.

Reset Default Settings:

Resets all Main Menu settings to the factory default settings. Select and press the Menu button.

Channel Select Auto:

The Channel LEDs on the front panel display buttons reveal the active channels, as well. See the section regarding “Controls” for more details on the channel LEDs.

The StarGate has two channel options. Highlight “Channel Select” and use the Left and Right keys to change channels. If both channels have been configured for use, the following options are relevant:

AUTO: Automatically selects the available channel.

CHANNEL A: Allows the operator to choose Channel A as active.

CHANNEL B: Allows the operator to choose Channel B as active (channel B is optional--not standard).

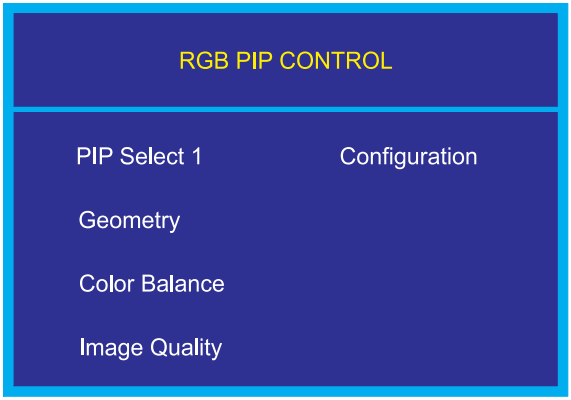
Doc# 27-0027UM Rev 1.0 Issued 10/04

KVM Control (see KVM on screen on previous page):

Toggles ON/OFF to apply or remove preset KVM command features. The preset commands are programmed as alternate functions of the firmware buttons on the front of the panel. For predefining the KVM character strains, please refer to SoftMenu instructions regarding KVM Control.

NOTE: When the KVM Control is turned ON, the Main Menu requires the button be held down for extended length of time to be made active.

RGB/Video PIP Control Screens



The unit will detect as many PIPs as are available. If no PIPs are installed on the system, the sub-menu will not be displayed.

Highlight “PIP Select 1”. The RGB and Video PIP menus offer similar adjustment options. The following sections describe the various RGB and Video menu options.

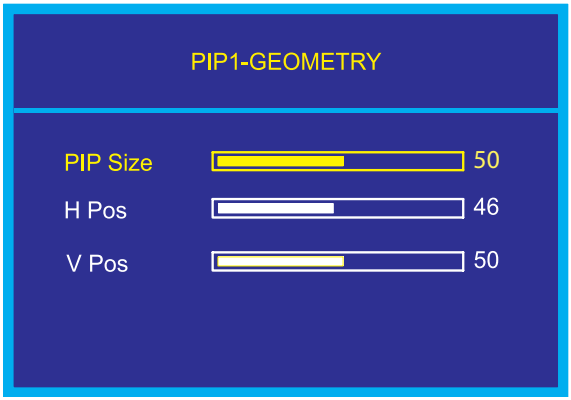
NOTE: Before adjusting the Geometry, Color Balance, or Image Quality of a PIP screen, the desired PIP needs to be enabled. See the section titled, “To Enable PIPs” for the proper initialization procedure.

FROM THE RGB PIP MENU

Once the desired RGB PIP is highlighted, press the “Menu” button on the display to access the RGB PIP submenu. Within the submenu, the following options are accessible:

RGB PIP Geometry

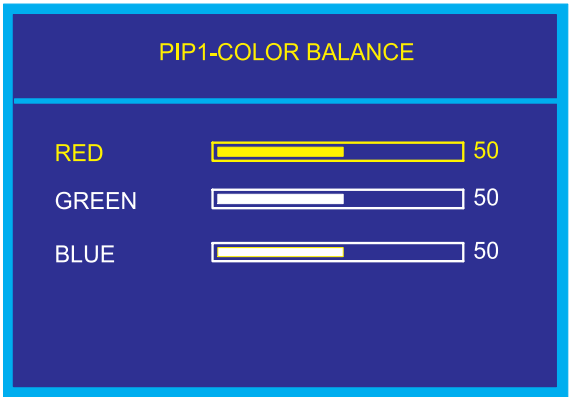
Use the Up and Down buttons to highlight the “Geometry” option. Press the “Menu” button to access the “Geometry” submenu.



Within this submenu, highlight the item to alter, and use the Left and Right buttons to adjust the PIP size, the Horizontal Positioning and the Vertical Positioning. Press “Exit” to return to the RGB PIP submenu. The new adjustments will be applied automatically.

RGB PIP Color Balance

Use the Up and Down buttons to highlight the “Color Balance” option. Press the “Menu” button to access the “Color Balance” submenu.



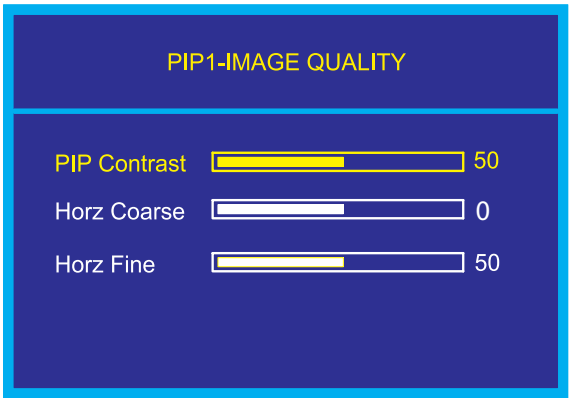
Within this submenu, highlight the color to adjust, and use the Left and Right buttons to alter the Red, Green and Blue color characteristics.

Press “Exit” to return to the RGB PIP submenu. The new adjustments will be applied automatically.

Doc# 27-0027UM Rev 1.0 Issued 10/04

RGB PIP Image Quality

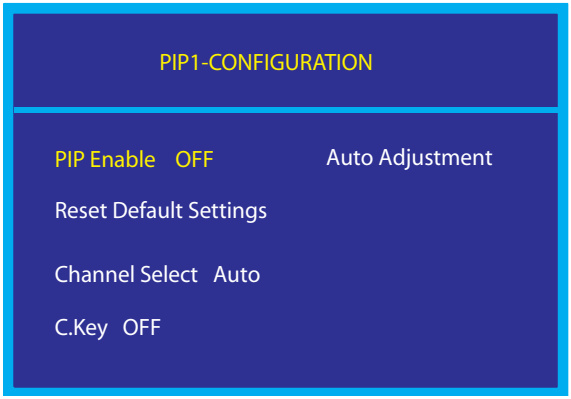
Use the Up and Down buttons to highlight the “Image Quality” option. Press the “Menu” button to access the “Image Quality” submenu.



Within this submenu, highlight the item to adjust, and use the Left and Right buttons to alter the PIP Contrast, the Horz Coarse and the Horz Fine characteristics. Press “Exit” to return to the RGB PIP submenu. The new adjustments will be applied automatically.

RGB PIP Configuration

PIP ENABLE: From the Main Menu, use the Up and Down buttons to locate the desired PIP. Once highlighted, press the Menu button again to access the PIP submenu. Use the Up and Down buttons to highlight the “Configuration” option. Press the Menu button to enable the “PIP Configuration” submenu.



Highlight the “PIP Enable” option and press the Left or Right buttons to choose the “ON” option. The PIP screen will appear. Exit the “PIP Configuration” submenu by pressing the “Exit” button.

RESET DEFAULT SETTINGS: Resets PIP values to factory default values.

CHANNEL SELECT: Determines the active RGB PIP channel (A, B and Auto). If only one channel is available, channel B will present no image.

AUTO ADJUSTMENT: Automatically adjusts the RGB PIP image to fit the screen. Undo the adjustment by choosing the Reset Default Settings option.

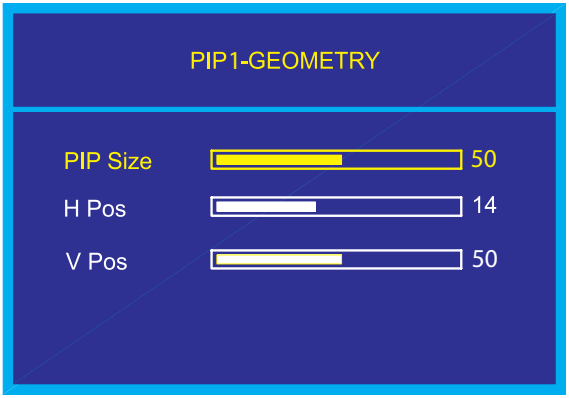
CHROMA KEY: Toggles PIP chroma key function OFF or to DEFAULT Settings.

FROM THE VIDEO PIP MENU

Once the desired Video PIP is highlighted, press the “Menu” button on the display to access the Video PIP submenu. Within the submenu, the following options are accessible:

Video PIP Geometry

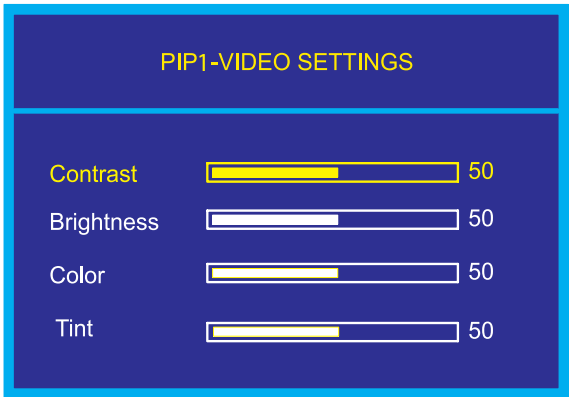
Use the Up and Down buttons to highlight the “Geometry” option. Press the “Menu” button to access the “Geometry” submenu.



Within this submenu, highlight the item to alter, and use the Left and Right buttons to adjust the PIP size, the Horizontal Positioning and the Vertical Positioning. Press “Exit” to return to the Video PIP submenu. The new adjustments will be applied automatically.

Video PIP Video Settings

Use the Up and Down buttons to highlight the “Video Settings” option. Press the “Menu” button to access the “Video Settings” submenu.



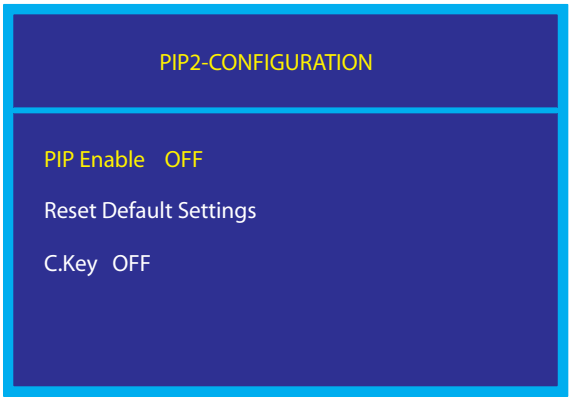
Within this submenu, highlight the item to alter, and use the Left and Right buttons to adjust the Contrast, Brightness, Color and Tint characteristics.

Press “Exit” to return to the Video PIP submenu. The new adjustments will be applied automatically.

Doc# 27-0027UM Rev 1.0 Issued 10/04

Video PIP Configuration

PIP ENABLE: From the Main Menu, use the Up and Down buttons to locate the desired Video PIP. Once highlighted, press the Menu button again to access the PIP submenu. Use the Up and Down buttons to highlight the “Configuration” option. Press the Menu button to enable the “PIP Configuration” submenu.



Highlight the “PIP Enable” option and press the Left or Right buttons to choose the “ON” option. The PIP screen will appear. Exit the “PIP Configuration” submenu by pressing the “Exit” button.

RESET DEFAULT SETTINGS: Resets PIP values to factory default values.

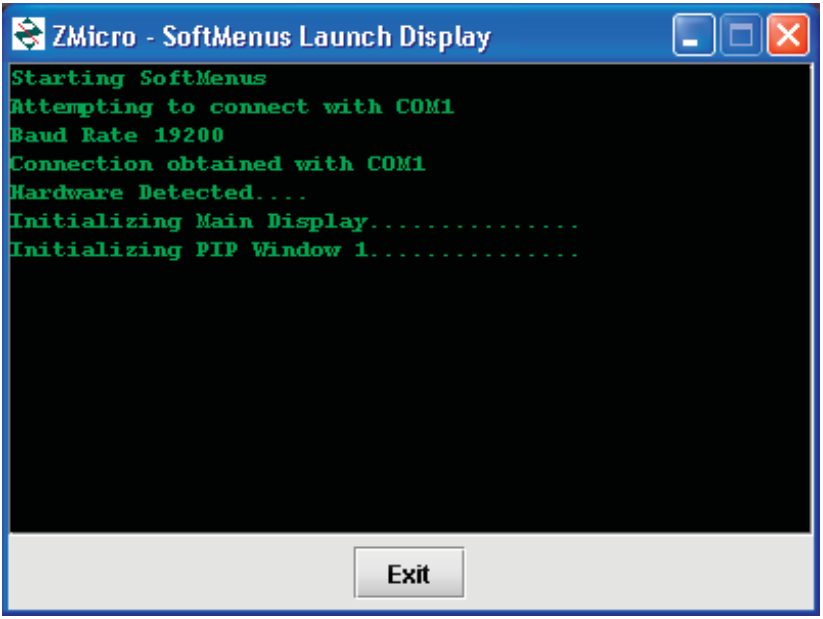
CHROMA KEY: Toggles PIP chroma key function OFF or to DEFAULT Settings.

SOFTMENUS™

SoftMenus™ are control panel dialog screens accessed from the host computer, allowing flexibility where positioning and environmental demands are a concern.

In order to access the SoftMenu™ features, the host serial port must be accessed at the rear of the StarGate. The StarGate must be connected to the computer and software must be installed.

The following initializing screen will appear as the SoftMenu™ software is launched:

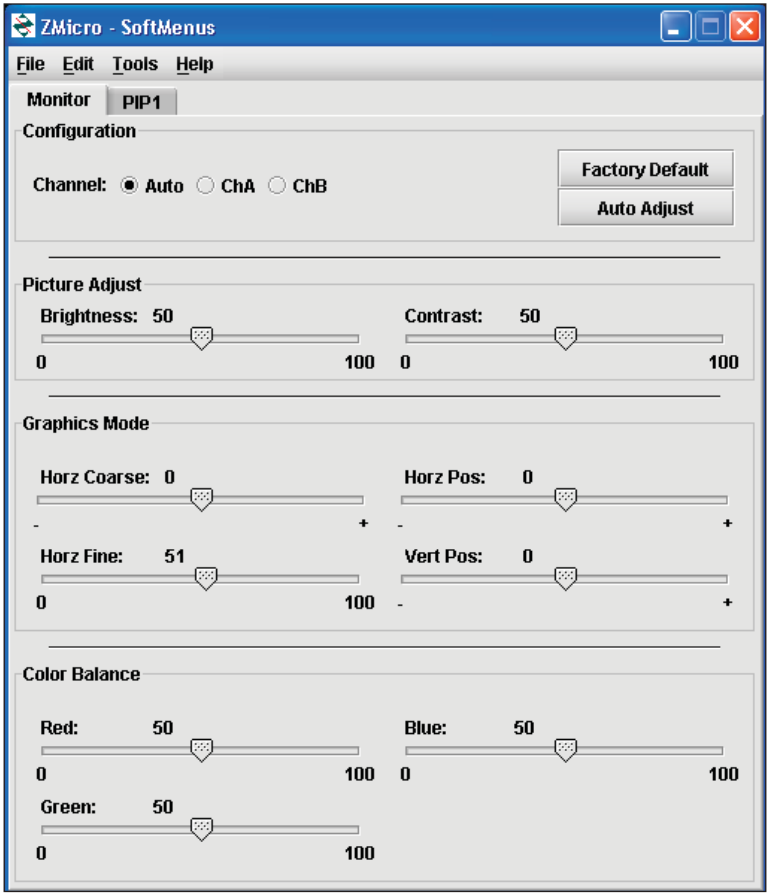


Clicking on the “Exit” button will cancel the SoftMenu™ program from opening.

Doc# 27-0027UM Rev 1.0 Issued 10/04

Monitor SoftMenus™

The Monitor SoftMenu™ dialog screen allows the operator to adjust Channel Configuration activity, Default settings, Auto Adjust, Brightness and Contrast characteristics, Coarse and Positioning range, and Color Balancing of the main screen image in one easy-to-use menu.



Monitor Screen “Factory Default” and “Auto Adjust” Buttons

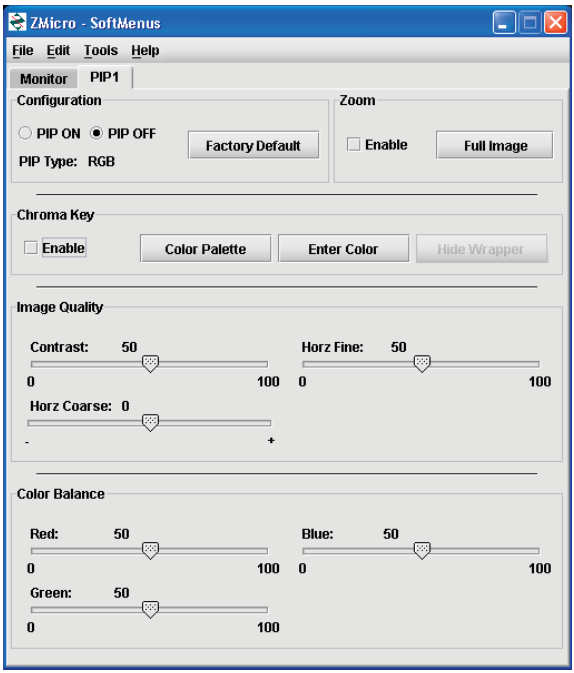
To adjust the monitor screen settings, the “Monitor” tab must be active.

By clicking on the “Factory Default” button, all settings will automatically reset to the prescribed factory default values. The “Auto Adjust” feature automatically adjusts the RGB image to fit the screen.

Doc# 27-0027UM Rev 1.0 Issued 10/04

PIP SoftMenus™

The PIP SoftMenu™ tabs allow the operator to choose RGB and NTSC PIP Color Balancing and Image Quality or Video Settings configurations, as well as Factory Default settings and Chroma keying. The settings for the RGB and NTSC PIPs will be different.



PIP "Factory Default" Button

Before any changes can be made, choose the PIP tab.

Once the PIP tab screen is activated, settings can be altered.

By clicking on the Factory Default button, all settings will automatically reset to the prescribed factory default values.

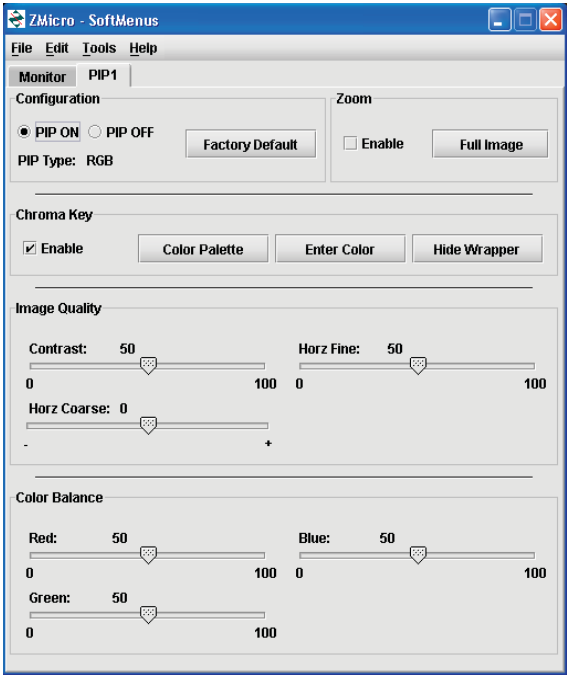
"Zoom"

To use the Zoom, the chroma key feature must be enabled. Click the "Enable" box under "Chroma Key" to use the Zoom feature. For more on the "Zoom" feature, see page 27.

"Chroma Key"

The chroma keying function will alter the PIP color attributes so that the main screen can be viewed from beneath the PIP screen when the PIP GUI wrapper is hidden. In addition, a PIP screen can be viewed from beneath other PIP screens by distilling certain color pixels to represent pertinent PIP content. The chroma keying functions are only adjustable from the SoftMenu screens.

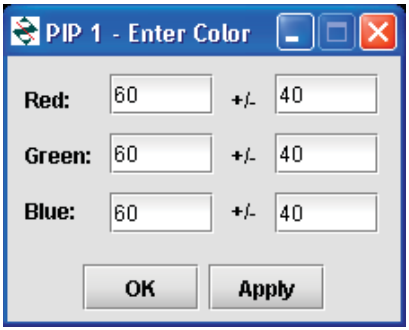
Doc# 27-0027UM Rev 1.0 Issued 10/04



"Enable" and "Hide/ Show Wrapper"
Click the "Enable" box to enable the chroma keying function. The "Hide/Show Wrapper" toggle key, when enabled, allows the operator to wrap the GUI PIP wrapper around the PIP image or hide it.

"Color Palette" and "Enter Color"
The PIP chroma keying Color Palettes and manual color values can be accessed with the "Color Palette" and "Enter Color" buttons. See below for details regarding manual and default color operation.

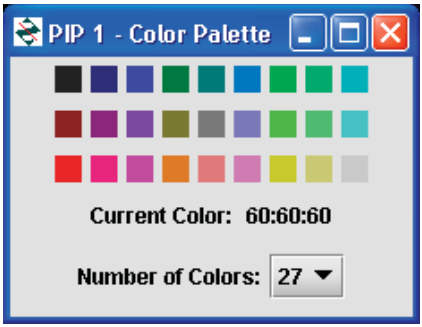
The "Enter Color" button allows the operator to directly adjust the red, green and blue values with the following table:

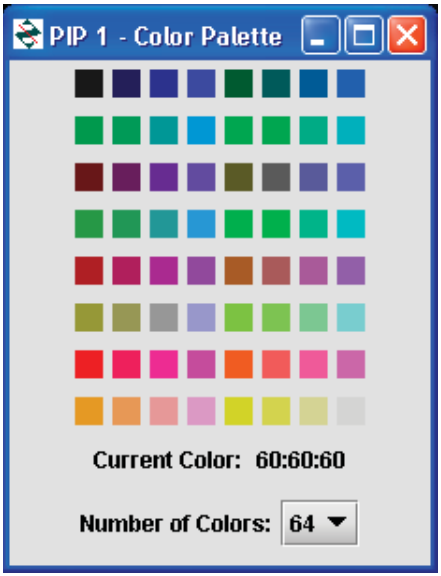


Any combination of values for the three base colors can be entered in the fields to the left. Each color value can be set between 0 and 255 on the RGB color range. For example, if all three colors are set to "0" the result will be black. This value acts as a center point to the values entered in the offset field. The offset value to the right is the amount the software will offset the centerpoint color values from one another to create color differentiation.

There can be only one color per PIP with the chroma key function. The PIP chroma keying color can also be chosen within PIP color palettes (shown below). There are three types of palettes available: 8 colors, 27 colors, and 64 colors. The fewer the colors in the palette, the greater the offset will be between PIP colors.

To choose from a larger palette, left click on the “Number of Colors” drop-down menu and move the cursor down to the desired number of colors in the palette. The corresponding palette will appear. Simply choose a color by clicking on it.

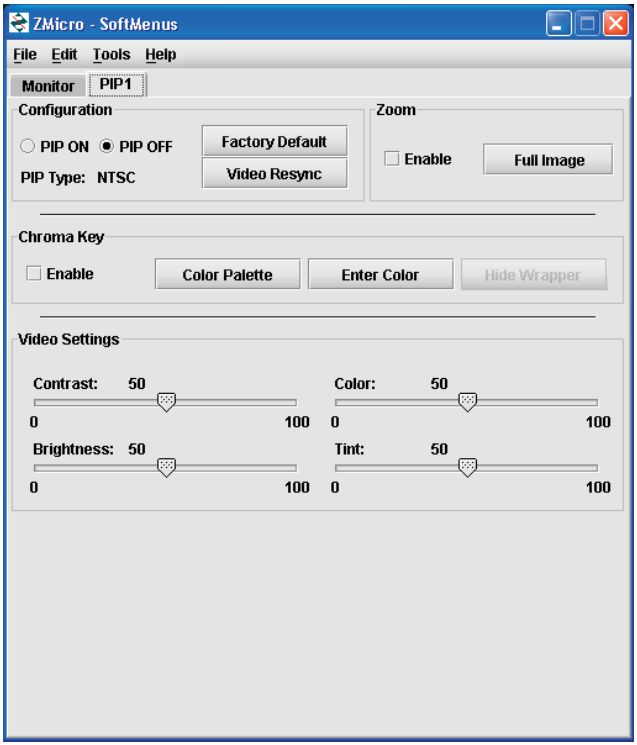




Doc# 27-0027UM Rev 1.0 Issued 10/04

Video Resync Option

If the Video Resync option has been chosen for the unit, please note the following capability . If the NTSC PIP image fails and does not recover, the “Video Resync” button will enable the PIP board to reanalyze the video input stream in an attempt to recover the image.



Doc# 27-0027UM Rev 1.0 Issued 10/04

MENU BAR

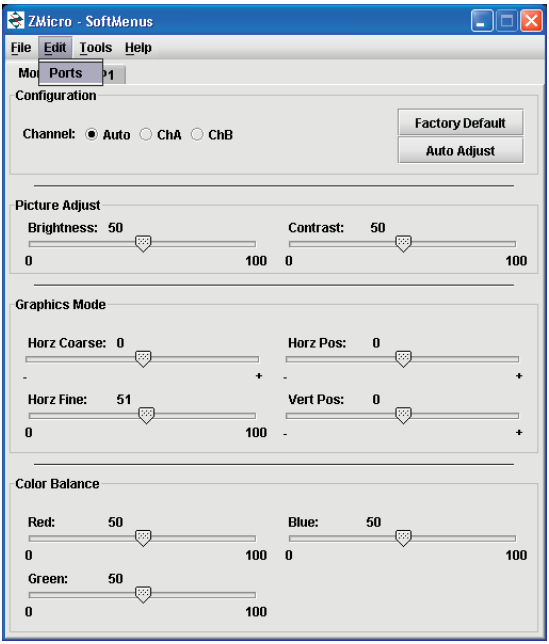
The SoftMenus' menu bar also includes the "Edit" and "Tools" drop-down menus. Left click on any of the following drop-down menus:

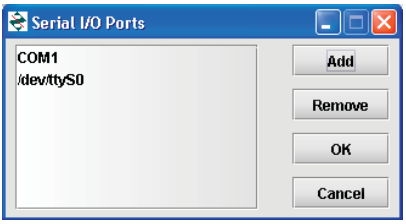
File

Load previously saved display settings and save settings in the "File" drop-down menu. Multiple users may wish to alter the settings individually with this feature.

Edit

Manage, add, and remove the ports used by SoftMenus for communication with the "Edit" drop-down menu.





Doc# 27-0027UM Rev 1.0 Issued 10/04

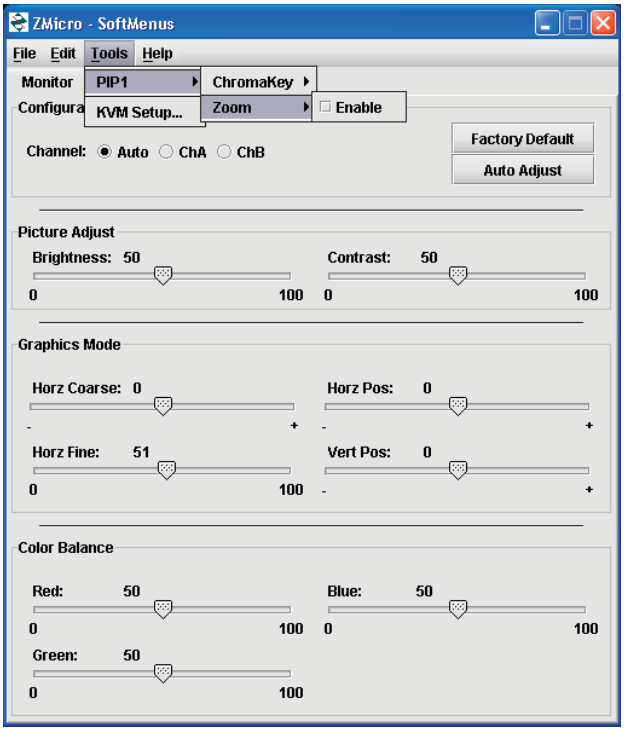
Tools

Manage the Chroma key and Zoom status of the various PIPs; allows the user to maintain activity in one tab window while simultaneously altering the chroma key and zoom functionality of a different PIP.

Zoom

The Zoom feature allows the user to focus on a certain area of the screen. There are two ways to enable Zoom:

1. Tools drop-down menu>PIP#>Zoom>Enable, as shown here:



2. Independent PIP Configuration Panels on the PIP tabs.

To restore the PIP image to its original scale, either double click on the zoomed image, or press the “Full Image” button on the PIP tab screen (see image above).

Help

Utilize the software “Help” settings to read about the version of the unit, as well as information about Z Microsystems.

NOTE: While Zoom is enabled in SoftMenus, the Chroma key function must remain enabled.

HOT KEYS

Hot Keys are only available on the Linux and Windows versions of Z Microsystems' software. The following combinations of "hot" keys have been customized for ease of use of the StarGate.

Ctrl + Tab

Press the "Control" and the "Tab" keys simultaneously to toggle between the Main Monitor and PIP tabs, from left to right.

Ctrl + PIP # 1, 2, 3, etc.

Press "Control" and the number of the PIP (i.e. "1") simultaneously to turn on a particular PIP. Press the two keys again to turn the PIP off.

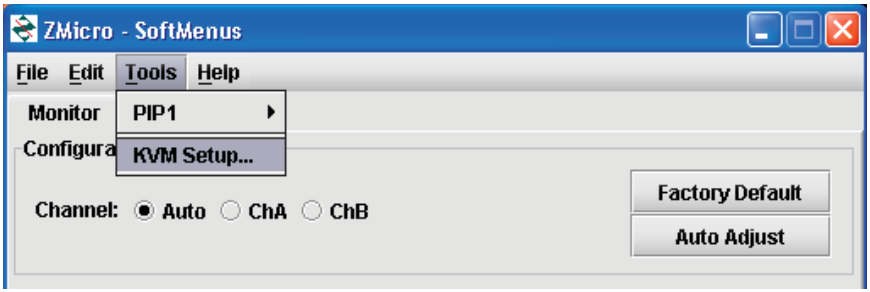
Ctrl + B

Press the "Control" and the "B" keys simultaneously to turn up the main image's brightness in small increments.

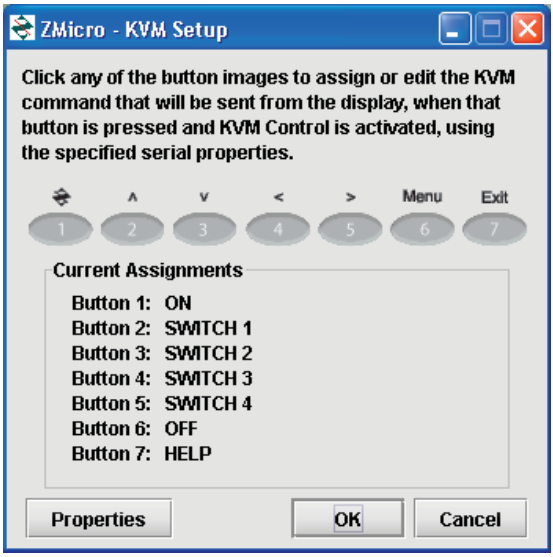
KVM Control

The SoftMenus KVM Control feature enables the display to communicate with the KVM over the serial port. The ASCII string assignments can only be configured through Soft-Menus.

To assign or alter the ASCII strings, click on the SoftMenus' Tools drop-down menu.



Left click on the "KVM Setup" option and the following screen will appear:



The button images map to the physical buttons on the display panel.

Click on the buttons corresponding to the desired string to gain access to the assignment screens.

Click on the "Properties" button to specify the serial port configuration the display should use to communicate with the KVM.

Click the "OK" button to save the settings and exit from the KVM Setup screen. Click the "Cancel" button to exit from the KVM Setup screen without saving the changes.

NOTE: The exact ASCII strings and serial port properties are defined by the KVM manufacturer. See the KVM manufacturer's documentation to assign the ASCII string.

MAINTAINING THE STARGATE

WARNING: Be sure to turn off the power before you perform any maintenance on the monitor.

WARNING: To avoid risk of electric shock, do not disassemble the monitor cabinet. Users cannot service the monitor. User maintenance is restricted to cleaning as explained below.

CLEANING THE MONITOR

Unplug the monitor from the power outlet before cleaning.

- To clean the flat panel display screen, lightly dampen a soft, clean cloth with water or mild detergent. If possible, use a special screen cleaning tissue or solution suitable for the display.
- Isopropyl alcohol may also be used to clean fingerprints or smudges on the face of the monitor. First apply the alcohol to the soft lint-free cloth before wiping the monitor. Do not apply the alcohol directly on the monitor.

Doc# 27-0027UM Rev 1.0 Issued 10/04

TROUBLESHOOTING THE STARGATE

No Main Display Image

If there is no image on the main screen, a signal will appear on the screen that states, “No Input, Check Cable”. If the cable from the computer to the display is secure, determine the color of the standby LED and follow the appropriate procedure below.

NOTE: These procedures only apply to the main screen image, not the picture-in-picture screens. See next section for PIP screen troubleshooting guide.

Black

Problem:
If the standby LED is black, there is no power to the unit.

Recovery:

- Ensure the power cable is plugged into the source.
- Connect the power cable to a AC outlet. Ensure the AC outlet is active.
- Wake up the display by pressing the standby button.

Orange

Problem:
If the standby LED is orange, there is no video signal.

Recovery:

- If Video A or Video B is selected, ensure there is a video signal coming into the selected channel.
- Ensure there is a video signal coming from the computer.

Green

Problem:
When the standby LED is green, there is both power and a video signal. If there is no image on the main display, there is a possible hardware failure.

Recovery:

- Ensure the video signal coming from the computer is not a black screen.
- Contact Z Microsystems’ Customer Support Department.

No Picture-in-Picture Option Appears on Main Menu

If no PIP menu is available from the Main Menu, the PIP has not been detected by the controller. Recycle power to the unit by disconnecting power and then reconnecting power. If no PIP is detected again when the Main Menu is powered up again, call Z Microsystems' Customer Support Department for assistance.

No Picture-in-Picture Display Image

There are a few scenarios which may cause the image on the PIP to be black. To eliminate these concerns, follow the instructions below in the order they are presented:

1. Ensure the PIP is viewing something with contrast and shape and can be easily detected under normal viewing conditions.

2. If the PIP is viewing something with these qualities, and should be easily detected, the values associated with Contrast and Color Balance may require adjustment. To ensure the Contrast and Color Balance values are not the cause of the black screen, set the values to the factory default settings. See section titled, "PIP SoftMenus™".

3. In some StarGate configurations, there are two inputs (RGB and Video channels). Ensure the correct channel is chosen for the desired PIP.

4. If the black screen is for the RGB PIP, perform an Auto Adjust in the PIP submenu.

5. If no PIP image appears, call Z Microsystems' Customer Support Department for assistance.

Display Image Has Vertical Bars

If the main image begins to display vertical bars, adjust the “Horz Coarse”. From the Main Menu, use the Up and Down buttons to highlight the “Graphics Mode” option. Press the “Menu” button to access the “Graphics Mode” submenu. Use the Left and Right buttons to adjust the screen until the number of bars is reduced. Continue adjusting one step at a time until the bars are no longer visible.

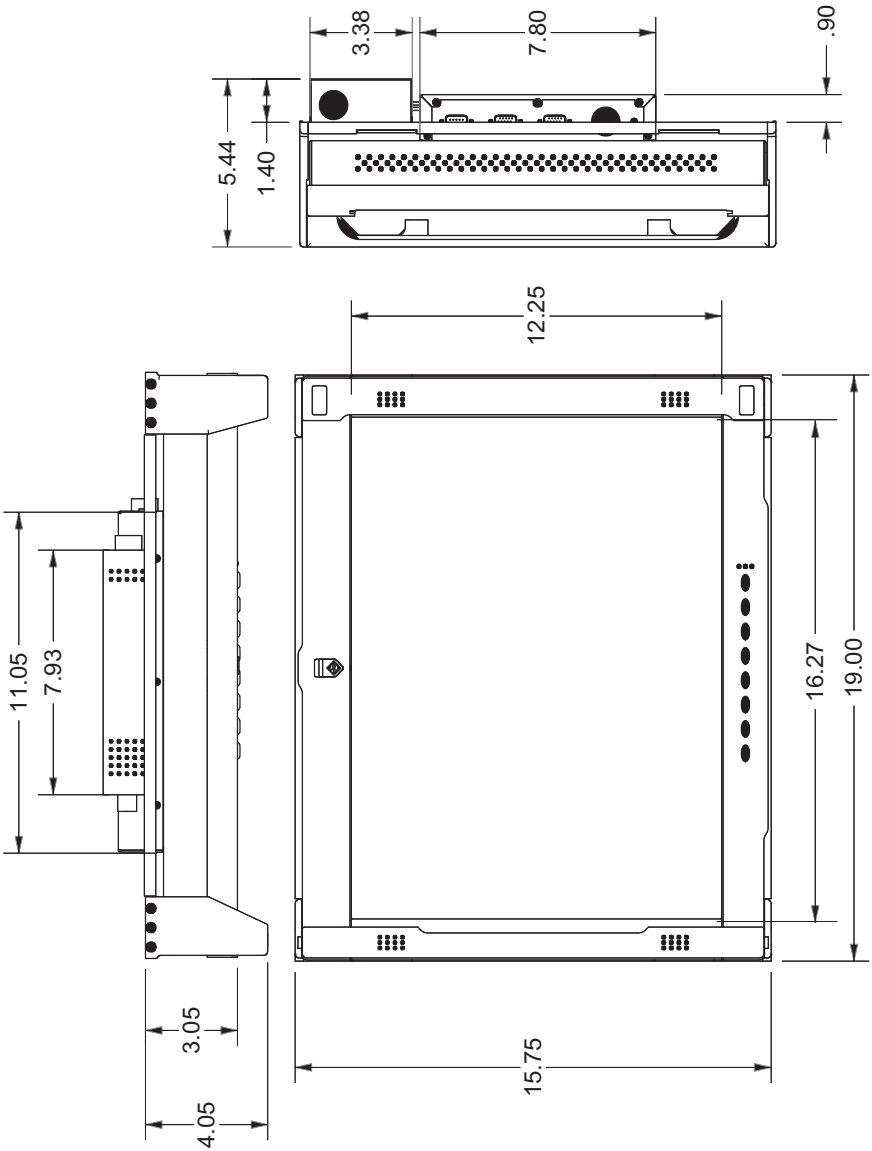
Display Image Appears Fuzzy

If the main image begins to appear fuzzy or “noisy”, adjust the “Horz Fine” until it is reduced. The “Horz Fine” option adjusts the phase of the video sampling clock. To access the “Horz Fine” submenu from the Main Menu, use the Up and Down buttons to highlight the “Graphics Mode” option. Press the “Menu” button to access the “Graphics Mode” submenu.

Power Light Does Not Illuminate

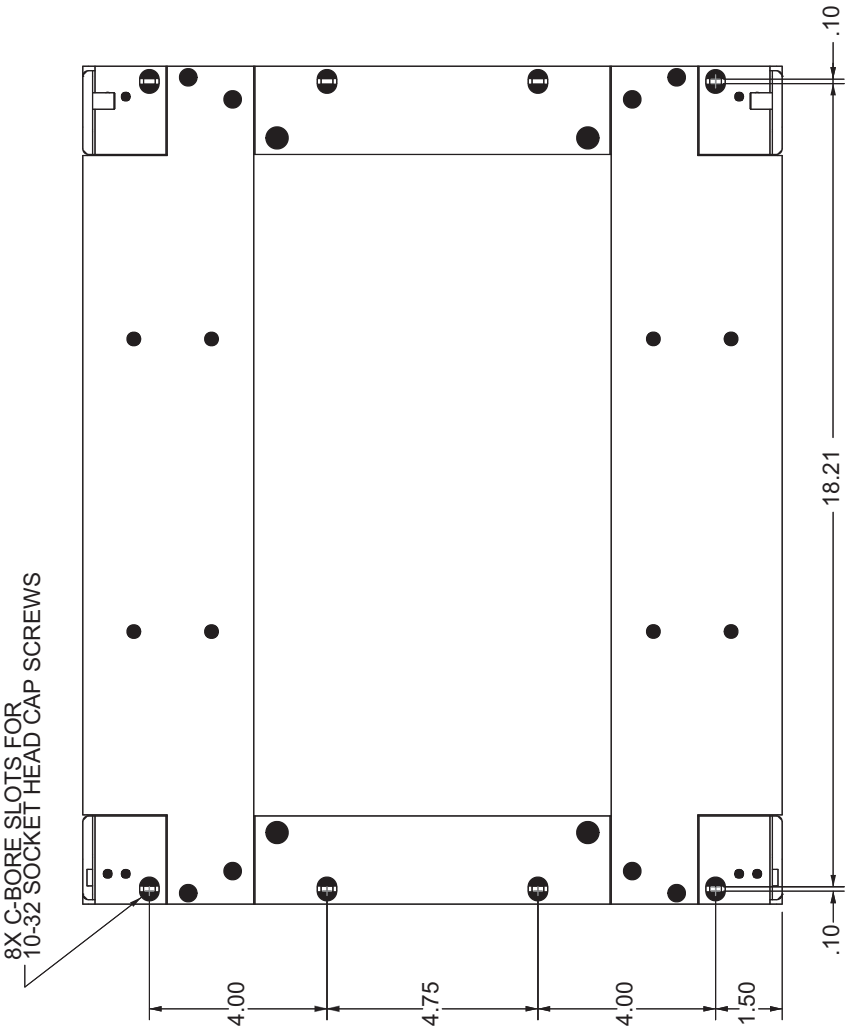
1. Check that power cable is properly connected to 110 VAC power supply.
2. Check that front panel power switch is on.
3. Check that power switch on back of StarGate display is on.

MECHANICAL OUTLINE FOR STARGATE



Doc# 27-0027UM Rev 1.0 Issued 10/04

MECHANICAL OUTLINE OF STARGATE MOUNTING BRACKET



Doc# 27-0027UM Rev 1.0 Issued 10/04

REPLACING PARTS

If the Z Microsystems Technical Support Engineer determines that the product needs to be replaced, a Customer Service Representative will issue a Return Material Authorization (RMA) number.

An RMA number is required to return a product to Z Microsystems, regardless of the reason for the return.

The Z Microsystems Customer Service Department/RMA Request Form will ask the customer to provide the following information:

- model number
- serial number
- problem
- return “ship to” address
- the name and address of the company department to which we will send the invoice (if product is out of warranty or is different from the “ship to” address.
- phone number and e-mail address of contact
- purchase order number

You will be given an RMA number and will be asked to send the product to:

Z Microsystems
ATTN.: (RMA#) It is very important to reference the RMA#
5945 Pacific Center Dr., Suite 505
San Diego, CA 92121

SPECIFICATIONS FOR STARGATE

The StarGate is designed to host a choice of LCD's from several manufacturers based upon customer requirements. The specifications unique to each particular LCD vary from manufacturer to manufacturer. These particular specifications are available through our sales department.

General Display Specifications		
	Display size	20.1 Inch
	Pixels	1600 x 1200
	Colors	16.7 Million
	Control	Control Panel or SoftMenu
	Options	One Picture-in-Picture Availalble TouchScreen (SAW)
Power		
	Power Consumption	110 W depending on whether the PIP option is installed
	AC Power Supply	100-240 VAC, 2.0 A, 50/60 Hz, 400 Hz
Cables		
		Display RGB Cable Standard VGA 15-pin 10' cable
		Options: BNC and MIL-Circular (call factory to discuss requirements)
		RS232 Serial 6' 9-pin DSUB provided (pins 2, 3, 5 straight through)
		Power 6' Cable, MIL-5015 Circular Connector Standard (IEC Connector Optional)
Physical		
	Total Packaging Size Total Weight	15.75" H x 19.0" W x 5.44" D Approximately 23 lbs. with no PIP
Environmental*		
	Operating Temp	0° to 50° C
	Extended Operating Temp**	-20° to 50° C
	Non-Op Temp	-40° to +70° C
	Humidity	5%-95% Non-Condensing
	Operating Altitude	Up to 15,000 ft.
	Non-Op Altitude	Up to 40,000 ft.
	Vibration	MIL-STD-167
	Shock	MIL-STD-810E, 20 g's, MIL-S-901D (in isolated rack)

	Fungus	Non-Nutrients/Contaminants
Reliability		
	MTBF	Display: 20,000 hrs w/ backlight change at 10,000 hrs.
	MRRT	<30 minutes
	Safety	UL 1950 (Used as a design guideline)
	EMI	Options: MIL-STD-461E (call factory to discuss requirements)
	Quality/Workmanship	IPC/ISO 9001:2000 and applicable section of MIL-HDBK-454

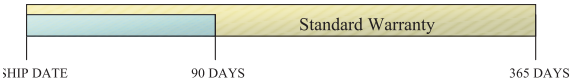
* Results of Environmental Tests pending

** Unit will power up and is legible at -20°C; backlight life is reduced

WARRANTIES

Standard Warranty

-no charge-



Z Microsystems' one-year Standard Warranty includes a 90-day AirSpare Service Plan. This means that if any standard Z Microsystems' product fails within the first 90 days after shipping, the customer will receive a new replacement.

All non-standard* products are covered for one year under Z Microsystems' Standard Warranty that includes free parts and labor. However, the 90-day AirSpare Plan can be purchased as an additional option for non-standard products.

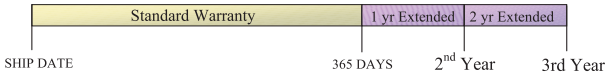
1-90 days - Z AirSpare Service

- 91-365 days - Free Parts and Labor
- 9-5 EST telephone technical assistance
- Online technical help
- Email product updates

*a non-standard product is a prototype or a product specifically designed or engineered per a customer's specification

To return a defective product a customer can call the Z Microsystems Customer Service Department at 1-858-657-1000, ext. 232, or fill out the RMA Request Form on our website. Please see the section in this manual titled, "Replacements" for details on how to replace a part.

Z Extended Warranty



Z Microsystems' Extended Warranty Plan provides one and two year extended warranty options under which a Standard Warranty is extended from the end of the first year of the Standard Warranty period.

The One-Year Extended Warranty period will begin on the day the Standard Warranty expires and the Two-Year Extended Warranty begins when the One-Year Extended Warranty expires.

1-90 days - Z AirSpare Service

91-365 days - Free Parts and Labor

- 9-5 EST telephone technical assistance
- Online technical help
- Email product updates

2nd year - Free Parts and Labor

- 9-5 EST telephone technical assistance
- Online technical help
- Email product updates

3rd year - Free Parts and Labor

- 9-5 EST telephone technical assistance
- Online technical help
- Email product updates

Doc# 27-0027UM Rev 1.0 Issued 10/04

Z Preferred Warranty

Z Microsystems provides a Preferred Service Plan under which Z Microsystems will repair or replace and return a defective product to the customer within one week of Z Microsystems' receipt of the defective product.

1-90 days - Z AirSpare Service

91-365 days - Free Parts and Labor

- 9-5 EST telephone technical assistance
- Online technical help
- Email product updates
- Guaranteed One Week Turnaround

2nd year - Free Parts and Labor

- 9-5 EST telephone technical assistance
- Online technical help
- Email product updates
- Guaranteed One Week Turnaround

3rd year - Free Parts and Labor

- 9-5 EST telephone technical assistance
- Online technical help
- Email product updates
- Guaranteed One Week Turnaround

Z Airspare Warranty

Z Microsystems provides an AirSpare Service Plan that will replace a defective product, within the first year of the warranty period, with a new product the following business day.* The AirSpare Service Plan does not cover special order items. A product may be deemed a special order item at the discretion of the Customer Service Department. Z Microsystems, at its discretion, may offer the AirSpare Service Plan to a customer who purchases a special order item at the one-year rate.

*Z Microsystems cannot guarantee next day delivery if contacted after 2:00 PM Pacific Time. Calls on Fridays or before holidays will receive a new product the following business day.

1st Year - 24 hour replacement

- 9-5 EST telephone technical assistance
- Online technical help
- Email product updates

2nd Year - 24 hour replacement

- 9-5 EST telephone technical assistance
- Online technical help
- email product updates

Z On-Site Service

Z Microsystems also provides on site service and consultation to customers who require Z Microsystems' technical expertise.

Disclaimer

Z Microsystems warrants that every product is free from defects in materials, workmanship and conforms to Z Microsystems' stringent specifications.

Z Microsystems calculates the expiration of the warranty period from the date the product is shipped. This means that the ship date on your invoice is your product ship date unless Z Microsystems informs you otherwise. During the warranty period, Z Microsystems will provide warranty service under the type of warranty purchased for the product.

Replacement parts will assume the remaining warranty of the parts they replace. If a product does not function as warranted during the warranty period, Z Microsystems will repair or replace the part (with a product that is as a minimum functionally equivalent) without charge.

If the product is transferred to another user, the warranty service is available to that user for the remainder of the warranty period.

Z Microsystems' warranties are voided if the covered product is damaged due to an accident or abuse. The warranty is voided if the product is shipped in sufficient packaging.

Under no circumstances is Z Microsystems liable for any of the following:

1. Third-party claims against you for losses or damages,
2. Loss of, or damage to, your records or data, or
3. Economic consequential damages (including lost profits or savings) or incidental damages, even if Z Microsystems is informed of their possibility.

Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights that vary from jurisdiction to jurisdiction.

Warranty does not take effect until full payment is received by Z Microsystems.

CUSTOMER SUPPORT

NOTE: For image problems, run AUTO SETUP again before consulting this section. In most cases, AUTO SETUP can fix the problems. See the Auto Setup section for details.

NOTE: If possible, stay by the computer. The Z Microsystems Technical Support Representative may wish to go through the problem over the telephone.

If you are unable to correct the problem yourself, contact:

Z Microsystems at:

(858) 657-1000
Fax: (858) 657-1001
Website: www.zmicro.com

Before calling, please have available as much of the following information as possible:

1. Model and serial number from the label on the monitor.
2. Purchase P.O.
3. Description of problem
4. Computer type and model
5. System configuration (hardware fitted, etc.)
6. System BIOS version number
7. Operating System and version number
8. Display driver version number
9. Video Adapter Type

NOTE: More help, late-breaking news and details of the latest accessories for these products may be found on the worldwide web at: http://www.zmicro.com

Doc# 27-0027UM Rev 1.0 Issued 10/04

CUSTOMER FEEDBACK

We value feedback on our products, their performance, problems found, and welcome all constructive suggestions. Please send such productive information in writing to:

Customer Service
Z Microsystems
5945 Pacific Center Blvd., Suite 505
San Diego, CA 92121

or www.zmicro.com

STARGATE SERIAL CONTROL ICD

The following serial port property settings must be in place in order for the host to have communication with the display.

SPEED	19,200 BPS
DATA BITS	8
PARITY	None
STOP BITS	1

The serial control ICD commands are presented here for the user's knowledge. The commands are written and controlled by Z Microsystems and are not intended for the customer to use. Any improper use of the commands may place the panel in an unstable state and may degrade the image quality, thereby voiding the warranty by the user.

Command Structure

The command structure for the majority of the commands for the display follow the following structure:

Z<space>U<PIP#><space><command><space><argument>

where...

"PIP#" = the picture-in-picture (PIP) card on which the command should act. The main image is PIP number "0"

"command" = the ascii string that represents the command

"argument" = the optional argument to the command

"space" = ascii character 0x32

The command structure must be succeeded by a carriage return (0x13).

The controller returns a string of tildes ('~') indicating that the command has been accepted and processed. Some of the commands return other information which will be specified on a per command basis.

Unless otherwise specified the command strings examined in this document must be placed in the above structure when being sent to the controller.

The commands will be broken down by the image on which it operates, either the main, RGB, or NTSC image. There may be overlap between the different images and the commands that work on them.

Main Image—Standard Command Structure

The following commands operate on PIP number "0" otherwise known as the main image.

PAA

Description
PAA has the controller perform its auto adjust algorithm. This often helps the main image

properly position itself if an uncommon image stream is provided to the display.

Argument
No arguments.

PBB

Description
PBB adjusts the blue balance of the main images RGB setting.

Argument
The allowable range is 0-255 base10. The factory default is 128.

PBG

Description
PBG adjusts the green balance of the main images RGB setting.

Argument
The allowable range is 0-255 base10. The factory default is 128.

PBR

Description
PBR adjusts the red balance of the main images RGB setting. On certain displays, a low brightness setting can cause the backlight to fade to black before reaching “0”.

Argument
The allowable range is 0-255 base10. The factory default is 128.

PCH

Description
PCH selects the channel that the controller should check for input. There are two channels through which that input can be provided—channels A and B. The unit can also be placed in auto detect mode. The unit does not allow itself to be placed on a dead channel after it has acquired a signal. If the controller has a good signal coming in on channel A and the controller is told to listen to channel B and channel B has no signal the controller will switch back to channel A.

Argument
For Auto mode 66, channel A 88, channel B 99 all base10. Default is Auto mode.

Return
The channel being listened to is returned in the following syntax:

=<mode>~~~

where “mode” = {66,88,99}

PDS

Description
PDS has the display place all of the settings back to the factory defaults.

Argument
No arguments.

PHC

Description
PHC adjusts the horizontal coarse setting.

Argument
The allowable range is 0-255 base10. The factory default is 128.

PHF

Description
PHF adjusts the horizontal fine setting.

Argument
The allowable range is 0-248 base10. The factory default is 119.

PHP

Description
PHP adjusts the horizontal position of the image.

Argument
The allowable range is 76-180 base10. The factory default is 128.

PIC

Description
PIC adjusts the images constrast.

Argument
The allowable range is 0-255 base10. The factory default is 128.

PUA

Description
If the display has been asked to auto adjust with the **PAA** command the PUA restores the display's image prior to the auto adjustment.

Argument
No arguments.

PVP

Description
PVP adjusts the vertical position of the image.

Argument
The allowable range is 106-150 base10. The factory default is 128.

Non-Standard Command Structure

The following commands do NOT use the standard command structure. They are sent “as is” to the controller, succeeded by a carriage return (CR).

EPROM SAVE

Description
EPROM SAVE instructs the controller to store the display settings. The stored settings will be used by the display when power is cycled until new settings are stored. This command must be issued if any changes to the settings are made and the changes need to be maintained between power cycles.

Argument
No arguments.

FRST NTSC

Description
FRST NTSC is used to query the controller for the number of the first NTSC PIP card in the display’s configuration. If there isn’t an NTSC PIP present in the configuration then “0” is returned. NTSC PIPs follow RGB PIPs so if there are any RGB PIPs present in the display’s configuration then the first NTSC number is equal to the last RGB number plus one.

Argument
No arguments.

Return
The number of the first NTSC PIP card. The syntax for the returned value is the following:

=<value>~~~~

where “value” = the number of the first NTSC PIP.

FRST RGB

Description
FRST RGB is used to query the controller for the number of the first RGB PIP card in the display’s configuration. If there is not an RGB PIP present in the configuration then “0” is returned. RGB PIPs are always numbered first in the current display implementation.

Argument

No arguments.

Return
The number of the first RGB PIP card. There are two valid values that this command can return “0” or “1”. If there is an RGB PIP provided with the display this command is issued to then “1” will be returned otherwise “0” is returned indicating that there is not an RGB PIP present. The syntax for the returned value is the following:

=<value>~~~~

where “value” = the number of the first RGB PIP.

LAST NTSC

Description
LAST NTSC is used to query the controller for the number of the last NTSC PIP card in the display’s configuration. If the **FRST NTSC** command returned “0”, indicating that no NTSC PIPs are present, then this command will return “0”.

Argument
No arguments.

Return
The number of the last NTSC PIP card. Valid return values for this command are 0 to the maximum number of PIPs the display’s configuration can accept. The syntax for the returned value is the following:

=<value>~~~~

where “value” = the number of the last NTSC PIP.

LAST RGB

Description
LAST RGB is used to query the controller for the number of the last RGB PIP card in the display’s configuration. If there is not an RGB PIP present in the configuration (the **FRST RGB** command returned “0”) then “0” is returned.

Argument
No arguments.

Return
The number of the last RGB PIP card. Valid return values for this command are “0” to the maximum number of PIPs the display’s configuration can accept. The syntax for the returned value is the following:

=<value>~~~~

where “value” = the number of the last RGB PIP.

The range of values returned by the FRST, LAST commands represent the values that are to be used to indicate the PIP number in the command structure. If for example the FRST RGB command returns a “1” and the **LAST RGB** command returns a “3” then there are 3 RGB PIPs on which commands can act. Therefore there are four valid values that can be

provide for PIP# in the command structure namely “0”, “1”, “2”, and “3”, where “0” acts on the main image and “1”, “2”, and “3” act on the RGB PIP specified.

RGB PIP

The following commands are those that act on the RGB PIPs contained in the display’s configuration.

PBB

Description
PBB adjusts the blue balance of the picture-in-picture’s RGB setting.

Argument
The allowable range is 0-255 base10. The factory default is 128.

PBG

Description
PBG adjusts the green balance of the picture-in-picture’s RGB setting.

Argument
The allowable range is 0-255 base10. The factory default is 128.

PBR

Description
PBR adjusts the red balance of the picture-in-picture’s RGB setting.

Argument
The allowable range is 0-255 base10. The factory default is 128.

PCK

Description
PCK toggles the chroma key feature ON/OFF.

Argument
Provide a “1” for ON and a “0” for OFF.

PDS

Description
PDS has the display place all of the RGB picture-in-picture settings back to the factory defaults.

Argument
No arguments.

PHB

Description
PHB sets the upper-bound of the blue portion of the RGB value used for chroma key. The upper-bound of the color is determined by taking the color value that is desired (0-255) and adding a guardband value to take into account accuracy limitations of the hardware. The upper-bound limit is still 255 even with the guardband.

Argument
The allowable range is 0-255 base10. The default value is dependent on which one of the PIPs being addressed. There are currently four chroma key colors used as default colors they are the following:

default for PIP 1 = Cyan (R:0,G:255,B:255)

default for PIP 2 = Magenta (R:255,G:0,B:255)

default for PIP 3 = Chartreuse (R:135,G:255,B:0)

default for PIP 4 = Sand (R:255,G:204,B:153)

default guardband = 50

The default for this command is the blue portion of the above RGB values plus the guard-band.

PHC

Description
PHC adjusts the horizontal coarse setting.

Argument
The allowable range is 0-255 base10. The factory default is 128.

PHF

Description
PHF adjusts the horizontal fine setting.

Argument
The allowable range is 0-248 base10. The factory default is 119.

PHG

Description
PHG sets the upper-bound of the green portion of the RGB value used for chroma key. The upper-bound of the color is determined by taking the color value that is desired (0-255) and adding a guardband value to take into account accuracy limitations of the hardware. The upper-bound limit is still 255 even with the guardband.

Argument
The allowable range is 0-255 base10. The default value is dependent on which one of the PIPs being addressed. There are currently four chroma key colors used as default colors they are the following:

default for PIP 1 = Cyan (R:0,G:255,B:255)

default for PIP 2 = Magenta (R:255,G:0,B:255)

default for PIP 3 = Chartreuse (R:135,G:255,B:0)

default for PIP 4 = Sand (R:255,G:204,B:153)

default guardband = 50

The default for this command is the green portion of the above RGB values plus the guardband.

PHP

Description
PHP adjusts the horizontal location of the RGB PIP.

Argument
The allowable range is 0-800 base10. The position of the PIP is based on a relative location system. Every two display pixels is equal to 1 relative location increment. The origin (0,0) is the upper-left hand corner of the display, with 800,0 being the upper-right, 0,600 is the lower-left, and 800,600 being the lower-right. Taking into account the 2:1 ratio, a value of 400 will place the RGB PIP's upper-left hand corner at the half way point horizontal on the display.

PHR

Description
PHR sets the upper-bound of the red portion of the RGB value used for chroma key. The upper-bound of the color is determined by taking the color value that is desired (0-255) and adding a guardband value to take into account accuracy limitations of the hardware. The upper-bound limit is still 255 even with the guardband.

Argument
The allowable range is 0-255 base10. The default value is dependent on which one of the PIPs being addressed. There are currently four chroma key colors used as default colors they are the following:

default for PIP 1 = Cyan (R:0,G:255,B:255)

default for PIP 2 = Magenta (R:255,G:0,B:255)

default for PIP 3 = Chartreuse (R:135,G:255,B:0)

default for PIP 4 = Sand (R:255,G:204,B:153)

default guardband = 50

The default for this command is the red portion of the above RGB values plus the guard-band.

PIC

Description
PIC adjusts the contrast of the RGB PIP.

Argument
The allowable range is 0-255 base10. The factory default is 128.

PLB

Description
PLB sets the lower-bound of the blue portion of the RGB value used for chroma key. The lower-bound of the color is determined by taking the color value that is desired (0-255) and subtracting a guardband value to take into account accuracy limitations of the hard-ware. The lower-bound limit is still “0” even with the guardband.

Argument
The allowable range is 0-255 base10. The default value is dependent on which one of the PIPs being addressed. There are currently four chroma key colors used as default colors they are the following:

default for PIP 1 = Cyan (R:0,G:255,B:255)

default for PIP 2 = Magenta (R:255,G:0,B:255)

default for PIP 3 = Chartreuse (R:135,G:255,B:0)

default for PIP 4 = Sand (R:255,G:204,B:153)

default guardband = 50

The default for this command is the blue portion of the above RGB values minus the guardband.

PLG

Description
PLG sets the lower-bound of the green portion of the RGB value used for chroma key. The lower-bound of the color is determined by taking the color value that is desired (0-255) and subtracting a guardband value to take into account accuracy limitations of the hard-ware. The lower-bound limit is still “0” even with the guardband.

Argument
The allowable range is 0-255 base10. The default value is dependent on which one of the PIPs being addressed. There are currently four chroma key colors used as default colors they are the following:

default for PIP 1 = Cyan (R:0,G:255,B:255)

default for PIP 2 = Magenta (R:255,G:0,B:255)

default for PIP 3 = Chartreuse (R:135,G:255,B:0)

default for PIP 4 = Sand (R:255,G:204,B:153)

default guardband = 50

The default for this command is the green portion of the above RGB values minus the guardband.

PLR

Description
PLR sets the lower-bound of the red portion of the RGB value used for chroma key. The lower-bound of the color is determined by taking the color value that is desired (0-255) and subtracting a guardband value to take into account accuracy limitations of the hardware. The lower-bound limit is still “0” even with the guardband.

Argument
The allowable range is 0-255 base10. The default value is dependent on which one of the PIPs being addressed. There are currently four chroma key colors used as default colors they are the following:

default for PIP 1 = Cyan (R:0,G:255,B:255)

default for PIP 2 = Magenta (R:255,G:0,B:255)

default for PIP 3 = Chartreuse (R:135,G:255,B:0)

default for PIP 4 = Sand (R:255,G:204,B:153)

default guardband = 50

The default for this command is the red portion of the above RGB values minus the guardband.

PON

Description
PON toggles the RGB PIP ON/OFF.

Argument
Provide a “1” to turn ON and a “0” to turn OFF.

PPC

Description
PPC changes the size of the RGB PIP. The aspect ratio of the native glass (4:3) is maintained by the display.

Argument
The allowable range is 10-800 base10. Providing a value of 800 makes the PIP fill the display.

PVP

Description
PVP adjusts the vertical position of the RGB PIP.

Argument
The allowable range is 0-600 base10. The position of the PIP is based on a relative location system. Every two display pixels is equal to “1” relative location increment. The origin (0,0) is the upper-left hand corner of the display, with 800,0 being the upper-right, 0,600 is the lower-left, and 800,600 being the lower-right. Taking into account the 2:1 ratio a value of 300 will place the RGB PIP’s upper-left hand corner at the half way point vertically on the display.

NTSC PIP

The following commands are those that act on the NTSC PIPs contained in the display configuration.

PCK

Description
PCK toggles the chroma key feature ON/OFF.

Argument
Provide a “1” for ON and a “0” for OFF.

PDS

Description
PDS has the display place all of the NTSC picture-in-picture settings back to the factory defaults.

Argument
No arguments.

PHB

Description
PHB sets the upper-bound of the blue portion of the RGB value used for chroma key. The upper-bound of the color is determined by taking the color value that is desired (0-255) and adding a guardband value to take into account accuracy limitations of the hardware. The upper-bound limit is still 255 even with the guardband.

Argument
The allowable range is 0-255 base10. The default value is dependent on which one of the PIPs being addressed. There are currently four chroma key colors used as default colors they are the following:

default for PIP 1 = Cyan (R:0,G:255,B:255)

default for PIP 2 = Magenta (R:255,G:0,B:255)

default for PIP 3 = Chartreuse (R:135,G:255,B:0)

default for PIP 4 = Sand (R:255,G:204,B:153)

default guardband = 50

The default for this command is the blue portion of the above RGB values plus the guardband.

PHG

Description
PHG sets the upper-bound of the green portion of the RGB value used for chroma key. The upper-bound of the color is determined by taking the color value that is desired (0-255) and adding a guardband value to take into account accuracy limitations of the hardware. The upper-bound limit is still 255 even with the guardband.

Argument
The allowable range is 0-255 base10. The default value is dependent on which one of the PIPs being addressed. There are currently four chroma key colors used as default colors they are the following:

default for PIP 1 = Cyan (R:0,G:255,B:255)

default for PIP 2 = Magenta (R:255,G:0,B:255)

default for PIP 3 = Chartreuse (R:135,G:255,B:0)

default for PIP 4 = Sand (R:255,G:204,B:153)

default guardband = 50

The default for this command is the green portion of the above RGB values plus the guardband.

PHP

Description
PHP adjusts the horizontal location of the NTSC PIP.

Argument
The allowable range is 0-800 base10. The position of the PIP is based on a relative location system. Every two display pixels is equal to 1 relative location increment. The origin (0,0) is the upper-left hand corner of the display, with 800,0 being the upper-right, 0,600 is the lower-left, and 800,600 being the lower-right. Taking into account the 2:1 ratio, a value of 400 will place the NTSC PIP's upper-left hand corner at the half way point horizontal on the display.

PHR

Description
PHR sets the upper-bound of the red portion of the RGB value used for chroma key. The upper-bound of the color is determined by taking the color value that is desired (0-255) and adding a guardband value to take into account accuracy limitations of the hardware. The upper-bound limit is still 255 even with the guardband.

Argument
The allowable range is 0-255 base10. The default value is dependent on which one of the PIPs being addressed. There are currently four chroma key colors used as default colors they are the following:

default for PIP 1 = Cyan (R:0,G:255,B:255)

default for PIP 2 = Magenta (R:255,G:0,B:255)

default for PIP 3 = Chartreuse (R:135,G:255,B:0)

default for PIP 4 = Sand (R:255,G:204,B:153)

default guardband = 50

The default for this command is the red portion of the above RGB values plus the guard-band.

PLB

Description
PLB sets the lower-bound of the blue portion of the RGB value used for chroma key. The lower-bound of the color is determined by taking the color value that is desired (0-255) and subtracting a guardband value to take into account accuracy limitations of the hard-ware. The lower-bound limit is still “0” even with the guardband.

Argument
The allowable range is 0-255 base10. The default value is dependent on which one of the PIPs being addressed. There are currently four chroma key colors used as default colors they are the following:

default for PIP 1 = Cyan (R:0,G:255,B:255)

default for PIP 2 = Magenta (R:255,G:0,B:255)

default for PIP 3 = Chartreuse (R:135,G:255,B:0)

default for PIP 4 = Sand (R:255,G:204,B:153)

default guardband = 50

The default for this command is the blue portion of the above RGB values minus the guardband.

PLG

Description
PLG sets the lower-bound of the green portion of the RGB value used for chroma key. The lower-bound of the color is determined by taking the color value that is desired (0-255) and subtracting a guardband value to take into account accuracy limitations of the hard-ware. The lower-bound limit is still “0” even with the guardband.

Argument
The allowable range is 0-255 base10. The default value is dependent on which one of the PIPs being addressed. There are currently four chroma key colors used as default colors they are the following:

default for PIP 1 = Cyan (R:0,G:255,B:255)

default for PIP 2 = Magenta (R:255,G:0,B:255)

default for PIP 3 = Chartreuse (R:135,G:255,B:0)

default for PIP 4 = Sand (R:255,G:204,B:153)

default guardband = 50

The default for this command is the green portion of the above RGB values minus the guardband.

PLR

Description
PLR sets the lower-bound of the red portion of the RGB value used for chroma key. The lower-bound of the color is determined by taking the color value that is desired (0-255) and subtracting a guardband value to take into account accuracy limitations of the hardware. The lower-bound limit is still “0” even with the guardband.

Argument
The allowable range is 0-255 base10. The default value is dependent on which one of the PIPs being addressed. There are currently four chroma key colors used as default colors they are the following:

default for PIP 1 = Cyan (R:0,G:255,B:255)

default for PIP 2 = Magenta (R:255,G:0,B:255)

default for PIP 3 = Chartreuse (R:135,G:255,B:0)

default for PIP 4 = Sand (R:255,G:204,B:153)

default guardband = 50

The default for this command is the red portion of the above RGB values minus the guardband.

PON

Description
PON toggles the NTSC PIP ON/OFF.

Argument
Provide a “1” to turn ON and a “0” to turn OFF.

PPC

Description
PPC changes the size of the NTSC PIP. The aspect ratio of the native glass (4:3) is maintained by the display.

Argument
The allowable range is 10-800 base10. Providing a value of 800 makes the PIP fill the display.

PVB

Description
PVB adjusts the NTSC PIP image brightness.

Argument
The allowable range is 0-255 base10. The factory default is 128.

PVC

Description
PVC adjusts the NTSC PIP image contrast.

Argument
The allowable range is 0-255 base10. The factory default is 128.

PVP

Description
Adjusts the vertical position of the NTSC PIP.

Argument
The allowable range is 0-600 base10. The position of the PIP is based on a relative location system. Every two display pixels is equal to “1” relative location increment. The origin (0,0) is the upper-left hand corner of the display, with 800,0 being the upper-right, 0,600 is the lower-left, and 800,600 being the lower-right. Taking into account the 2:1 ratio, a value of 300 will place the NTSC PIP’s upper-left hand corner at the half way point vertically on the display.

PVT

Description
PVT adjusts the NTSC PIP image color.

Argument
The allowable range is 0-255 base10. The factory default is 128.

Z Microsystems, Inc.
5945 Pacific Center Blvd., Suite 505
San Diego, CA 92121
Phone: (858) 657-1000
Fax: (858) 657-1001
Website: www.zmicro.com
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